PHOTOELECTRIC ROTARY ENCODER KIT

AR34M

Absolute Encoder

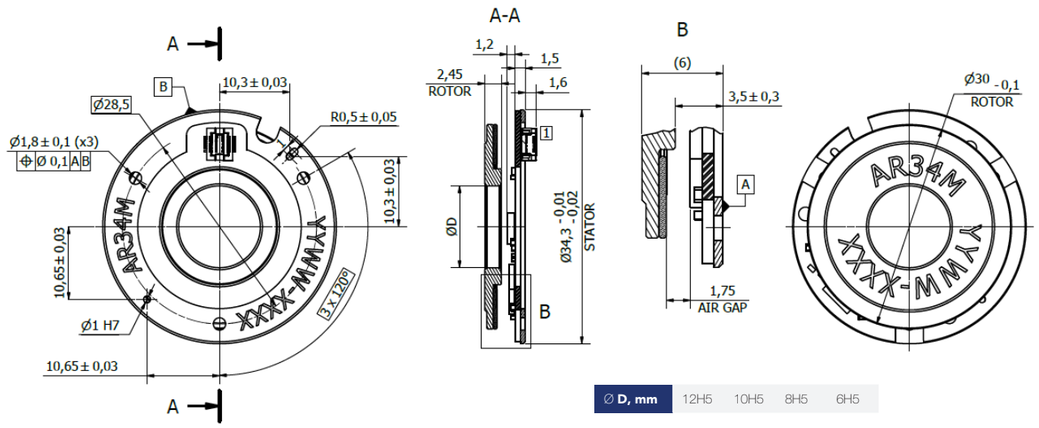
SSI protocol

High Resolutions

Modular

BiSS protocol

This is a photoelectric absolute rotary encoder kit that can have up to 22 bit singleturn resolution and BISS C output signal interface.



∅ D, mm	12H5	10H5	8H5	6H5

MECHANICAL DATA

Airgap	$1.5^{+0.6}_{-0.1}$ mm
Radial Misalignment between rotor and stator	< 0.3 mm
Tangential Misalignment between rotor and stator	< 0.3 mm
Runout sensitivity (mechanical only - customer shaft)	< 0.05 mm
Weight	< 15 g
Ambient Temperature	-40°C to +85°C
Storage Time	15 years
Relative Humidity	70%RH
Vibrations:	
- operational	3.17 G`s RMS| 20÷2000 [Hz] for 5 [min], along three major axes
- storage	15 G`s RMS| 10÷2000 [Hz] for 4 [hour], along three major axes
Mechanical Shock	180 g, 20 ms, 1/2 sine, along 3 major axes in both directions

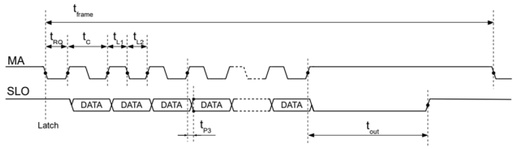
ELECTRICAL DATA

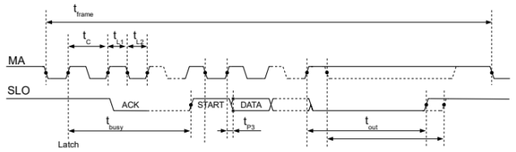
Counts per turn	4.194.304 (2^{22})
Accuracy*	±0.2° (per 360°) ±0.1° (for partial arc of 90°)
Measurement Noise (at static position)	< ±2LSB
Repeatibility	< ±2LSB
Micro-linearity error (DNL)	< ±4LSB
Data Latency Nominal Value	< 20 µs
Data Latency Nominal Uncertainty	< 5 µs
Rotation Speed	5000 RPM (mechanical survival) Up to 300 RPM - full electrical performance
Encoder input voltage	5 ±0.25 V
Current draw	< 150 mA
Data output format	BiSS + ABZ
BiSS clock frequency	1 < fclock < 20 MHz
Power up to full performance time	< 20 ms
Sensors refresh rate	20 KHz
Sampling rate	< 50 KHz

*Encoder`s accuracy will be within the acceptance range under the maximum rotation speed.

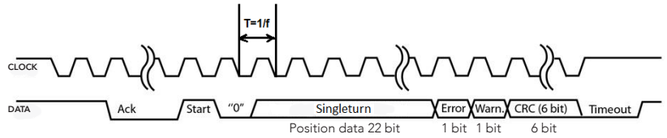
INTERFACE

ABSOLUTE DIGITAL INTERFACE





DATA TRANSFER BISS-C



DESCRIPTION	DATA
$T_{timeout}$	Typ. 20 us
Clock frequency	62.4 kHz - 20 MHz

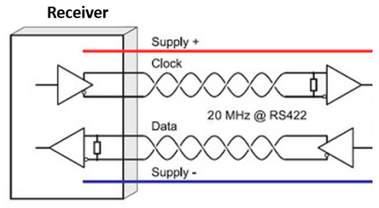
(HEXADECIMAL)	POLYNOME (BINARY)	(POLYNOMAL)	MAX.DATA LENGTH	HAMMING DISTANCE	APPLICATION
0x43	0b100.0011	$X^6+X^1+X^0$	up to 57 bit	3	Sensor data (SCD)

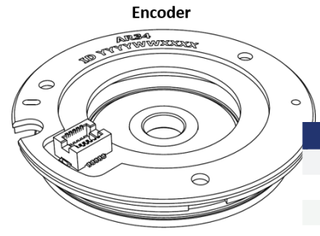
More detailed information (BiSS-Interface AN3: CYCLIC REDUNDANCY CODES)
All values are transmitted MSB first.

	MIN.	TYP.	MAX.	
Adaptive Slave Timeout at DATA	0.075	t_{init} + 0.2*	24	us
Fixed Slave Timeout at DATA	16	20	24	us

*t_{init} measured as first 1.5 · T(MA) each frame

TYPICAL OPERATING CIRCUIT FOR BISS





SIGNAL	PIN. NO
Gnd	5
Vdd(+5V)	6
Clk-	3
Clk+	4
Data-	1
Data+	2
NC	7
Z	8
B	9
A	10

CONNECTOR

Hirose connector: DF12NC(3.0)-10DP-0.5V(51)

PIN-OUT DESCRIPTION

ORDER FORM

AR34M - X1 - X2 - X3 - X4 - X5 - X6

Interface (X1):	Singleturn bit number (X2):	Code (X3):	Single-ended Incremental Signal Resolution (X4)	Cable length (X5):	Connector type (X6):
S - SSI **B** - BiSS C	**B1** - 1 ...-... **B22** - 22	**B** - Binary **G** - Gray (only for SSI interface)		**T100** - 0.1 m ...-... **T1000** - 1 m (standard) ...-... **T4500** - 4.5 m (maximum)	**D9** - flat, 9 pins (standard) **W** - without connector **B12** - round, 12 pins **C9** -round, 9 pins **C12** - round, 12 pins **R510** - round, 10 pins **ONC** - round, 10 pins

ORDER EXAMPLE: 1) AR34M-S-B22-B-X-T100-W